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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/631,491	08/03/2000	Takao Maeda	5576-131	9818

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 04/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

1-D-7

# Office Action Summary

Application No.	Applicant(s)	
09/631,491	MAEDA ET AL.	
Examiner	Art Unit	
Harry D Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,4-7 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,12,16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1, 5-7 and 12-17 are pending, with claims 13-15 being withdrawn from consideration as being drawn to a non-elected invention.
2. The rejection under 35 USC 102 based on the Visintin et al reference has been withdrawn in view of the amendment filed 28 January 2002.
3. The rejection under 35 USC 103 based on the Boter reference has been withdrawn in view of the amendment filed 28 January 2002.

### ***Election/Restrictions***

4. Applicant's election of Group I, claims 1-7, 12 and 16 in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 1, 6 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "CaCu<sub>5</sub> type" in claims 1, 6 and 16 is vague and indefinite as to the scope of the claims, see Ex parte Attig 7 USPQ 2d 1092 (BPAI, 1988); Ex parte Copenhaver 109 USPQ 118 (BPAI). Specifically, the word "type" is vague and indefinite.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 5-7, 12, 16 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagihara et al (JP 60-250557 A).

Yanagihara et al teach (see abstract) a hydrogen storage alloy that has the general formula  $\text{LaNi}_x\text{Co}_y\text{M}_z$ . M is selected from a list that includes Mg. The subscripts have ranges such that a composition can be selected such that the alloy contains 1.0 wt% Mg, 6.0 wt% Co and 34.57 wt% La with the balance Ni ( $x=4.0$ ,  $y=0.40907891$ ,  $z=0.16531804$ ).

Yanagihara et al fail to meet the claimed range of La. However, the composition range of La would have been obvious because the prior art range is close enough that one skilled in the art would have expected it to have the same properties, see MPEP 2144.05.

Regarding claim 5, Yanagihara et al teach (see English abstract) that the M metal can be selected from "at least one of" a list of metals. Among the metals on this list is V. The disclosure indicates that mixtures of metals for the formula for M are within the scope of Yanagihara et al. Therefore, Yanagihara et al teach adding V to the hydrogen storage alloy even though no specific example contains Mg while also containing V.

Regarding claims 6, 7 and 17, with respect to the property of crystal lattice constants, the alloy composition taught by Yanagihara et al overlaps the alloy composition recited in the claims. The method of making described by Yanagihara et al (see page 296, upper right, orally translated by USPTO) includes arc melting in an Ar atmosphere followed by casting to form an ingot. This method is substantially similar to the method of the present invention. Therefore, one of ordinary skill in the art would have expected that the products taught by the reference would have the same crystal lattice constants as claimed because the alloy has an nearly identical composition and is made by a substantially similar method. The selected alloy of Yanagihara et al contains 6 wt% Co.

"Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing they are not.' In re Spada, 15 USPQ2d 1655, 168 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best 195 USPQ 430, 433 (CCPA 1977)." See MPEP 2112.01

Regarding claim 12, Yanagihara et al teach a hydrogen storage alloy which is based on the formula  $\text{La}_u\text{R}_v\text{Mg}_w\text{Ni}_x\text{Co}_y\text{M}_z$ , where v is 0 and z is 0.  $(x+y+z)/(u+v)$  for the selected composition (as above) is 4.409.

Regarding claim 16, Yanagihara et al teach (see English abstract) that a battery is made from an electrode that is made from the hydrogen storage alloy disclosed therein.

9. Claims 1, 5-7, 12, 16 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al (US 6,248,475).

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Hayashida et al teach (see abstract) a hydrogen-storage alloy. The alloy has the general formula  $(R_{1-x}Mg_x)Ni_yA_z$ . Within the disclosed range is  $R=La$ ,  $x=0.15$  (more preferred, see col 6, line 2),  $y=4.5$  and  $z=0$ . This yields an alloy with 30.6 wt% La, 0.945 wt% Mg and the balance Ni, with no Co.

It would have been within the expected skill of a routineer in the art to have selected the claimed composition within the range disclosed by Hayashida et al in order to optimize the hydrogen storage characteristics.

Regarding claim 5, Hayashida et al teach (see abstract) that the A metal can be selected from "at least one of" a list of metals. Among the metals on this list is V. Therefore, Hayashida et al teach adding V to the hydrogen storage alloy even though no specific example contains Mg while also containing V.

Regarding claims 6, 7 and 17, with respect to the property of crystal lattice constants, the alloy composition taught by Hayashida et al overlaps the alloy composition recited in the claims. The method of making described by Hayashida et al (see col 17, lines 16-23) includes melting and followed by heat treatment in an Ar atmosphere. This method is substantially similar to the method of the present invention. Therefore, one of ordinary skill in the art would have expected that the products taught by the reference would have the same crystal lattice constants as claimed because the alloy has an nearly identical composition and is made by a substantially similar method. The alloy contains no Co.

Regarding claim 12, Hayashida et al teach a hydrogen storage alloy which is based on the formula  $\text{La}_u\text{R}_v\text{Mg}_w\text{Ni}_x\text{Co}_y\text{M}_z$ , where v, y and z are 0.  $(x+y+z)/(u+v)$  for the selected composition (as above) is 4.5.

Regarding claim 16, Hayashida et al teach (see abstract) that a secondary battery is made using a negative electrode made from the hydrogen storage alloy disclosed therein.

10. Claims 1, 5-7, 12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko (EP 0 790323).

Kaneko teaches (see abstract) a rare-earth metal/nickel-base hydrogen storage alloy. The alloy contains alloying element L, which can be Mg. The L element (see page 2, lines 17-21) provides improved battery life. R is a rare-earth metal rich. Thus, a composition that is within the disclosed range of Kaneko is  $\text{La}_{0.9}\text{Mg}_{0.1}\text{Ni}_{4.5}$ , which yields 31.9 wt% La and 0.62 wt% Mg. It would have been within the expected skill of a routineer in the art to have selected the claimed composition within the disclosed range in order to optimize the hydrogen storage properties of the alloy.

Regarding claim 5, Kaneko teaches (see abstract) that the alloy can have additional alloying elements, M, and that they can be selected from "at least one of" a list of metals. Among the metals on this list is V. Therefore, Kaneko teaches adding V to the hydrogen storage alloy even though no specific example contains Mg while also containing V.

Regarding claims 6, 7 and 17, with respect to the property of crystal lattice constants, the alloy composition taught by Kaneko overlaps the alloy composition

recited in the claims. The method of making described by Kaneko (see page 5, lines 38-41) includes melting and casting. This method is substantially similar to the method of the present invention. Therefore, one of ordinary skill in the art would have expected that the products taught by the reference would have the same crystal lattice constants as claimed because the alloy has an identical composition and is made by a substantially similar method. The alloy contains no Co.

Regarding claim 12, Kaneko teaches a hydrogen storage alloy which is based on the formula  $\text{La}_u\text{R}_v\text{Mg}_w\text{Ni}_x\text{Co}_y\text{M}_z$ , where v, y and z are 0.  $(x+y+z)/(u+v)$  for the selected composition (as above) is 4.5.

Regarding claim 16, Kaneko teaches (see title) that a secondary battery is made using a negative electrode made from the hydrogen storage alloy disclosed therein.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 1, 5-7, 12, 16 and 17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Response to Amendment***

12. The declaration under 37 CFR 1.132 filed 28 January 2002 is sufficient to overcome the rejection of claim 6 based upon 35 USC 102 over Yanagihara et al (JP 60-250557 A). However, new grounds of rejection are presented here, and the declaration is insufficient to overcome the new grounds.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



- a. Yajima et al (US 4,126,242) teach an R-Mg-Ni series alloy;
  - b. Osumi et al (US 4,347,082) teach a MmNi<sub>5</sub> alloy where the Misch metal contains Mg;
  - c. Sasai et al (US 4,744,946) teach a modified Misch metal that contains up to 70 wt% La;
  - d. Yamaguchi et al (US 6,068,713) teach a A<sub>5</sub>T<sub>19</sub> hydrogen storage alloy that can contain La and Mg as A;
  - e. Lee et al (US 6,106,768) teach a Mm-Ni alloy where some or all of the cobalt is replaced with other elements;
  - f. Chen et al (US 6,174,345) teach that Mg is often added to MmNi<sub>5</sub> alloys to increase the hydrogen absorption capacity; and,
  - g. Osumi et al (JP 56-169746) teach a Misch metal that contains up to 2 wt% Mg.
14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-F 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III  
Examiner  
Art Unit 1742

hdw  
March 28, 2002

**ROY KING**   
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**